THE CITY OF NEW YORK
DEPARTMENT OF HEALTH & MENTAL HYGIENE

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2002 Health Alert #36

TO: Infectious Disease Physicians, Emergency Department Physicians, Laboratory Directors, Infection Control Practitioners and other HealthCare Providers

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New York City Department of Health & Mental Hygiene

DATE: November 6, 2002

RE: **Two cases of travel-associated bubonic plague in New York City**

Please Share With Colleagues in Emergency Medicine, Family Practice, Internal Medicine, Laboratory Medicine, and Pediatrics

The New York City Department of Health and Mental Hygiene (NYC DOHMH) has presumptively diagnosed bubonic plague in a 53-year-old male resident of New Mexico who was visiting New York City. In addition, the patient's 47-year-old wife has symptoms consistent with bubonic plague and laboratory test results are pending.

Both patients reside in Santa Fe County, New Mexico – in an area that is known to be an enzootic focus for plague. The source of these patients' infections is suspected to be rodents and rodent fleas near their home, as a woodrat that was found in the patients' back yard this past July tested positive for plague. Fleas taken from this woodrat also tested positive for plague.

This couple traveled to New York City on November 1, 2002 and both developed a flu-like illness on November 3rd. As symptoms continued to worsen, they were admitted to a hospital on November 5th and on examination both had fever and swollen, tender inguinal lymph nodes ("buboes"). A blood culture on the male patient tested positive at the NYC DOHMH's Public Health Laboratory this evening for *Yersinia pestis* by both polymerase chain reaction and direct fluorescent antibody testing. Further confirmatory tests will be performed by the Centers for Disease Control and Prevention (CDC). Laboratory tests on the female patient are still pending, but her clinical presentation is consistent with bubonic plague. Both patients are being treated with aminoglycosides and doxycycline. The 53-year-old male, who is also diabetic, is in critical condition with a secondary septicemia and multi-system failure; the 47-year-old female is stable.

All epidemiologic evidence suggests that these infections were naturally acquired in New Mexico. Although the exact source of exposure for these patients is not yet known, most human plague cases are due to bites from plague-infected fleas around the home. The usual incubation period for plague is between 2 to 7 days. As these patients became ill within 48 hours of their arrival in New York City, their exposure occurred in New Mexico. Since *Y. pestis* was isolated recently from fleas on their property, this is the location where they probably were infected. The New Mexico Department of Health and the CDC are currently conducting an environmental investigation in the area around these patients' home to assess potential sources of exposure.

As neither patient had symptoms or radiographic evidence of pneumonia, antibiotic prophylaxis has not been recommended for any hospital or social contacts. Laboratory staff handling specimens from these patients have been instructed to follow Biosafety Level 2 precautions.

Naturally occurring plague is a disease primarily affecting rodents, and transmission between rodents is via infected fleas. In the United States, bubonic plague is transmitted to humans through the bites of infected fleas; bubonic plague is not transmitted person to person. Pneumonic plague is transmitted after plague bacilli are inhaled following direct contact with infected animals, including rodents, wildlife and pets (cats and dogs) or via droplet transmission from a patient with pneumonic plague.

Bubonic plague symptoms in humans include fever; painful swollen lymph nodes in the groin, armpit or neck areas; chills; and headache, vomiting, and diarrhea. Patients may develop secondary septicemic plague or pneumonic plague; pneumonic plague can be spread person-to-person. With prompt diagnosis and appropriate antibiotic treatment and supportive care, most patients with bubonic plague survive.

Human plague has been reported most often from the four western states of Arizona, California, Colorado and New Mexico. Wild rodents, especially ground squirrels and prairie dogs, are the natural reservoir for the plague bacterium. Since January 1980, there have been 272 cases of plague reported in the United States; the overwhelming majority of cases were bubonic plague. Of these, 143 (53%) were acquired in New Mexico. Plague is not enzootic in the eastern United States; there has not been a case of plague in New York City in at least 100 years.

Useful websites for additional information on plague include:

- Centers for Disease Control and Prevention
  www.bt.cdc.gov/agent/plague/index.asp

- Johns Hopkins Center for Civilian Biodefense Strategies
  www.hopkins-biodefense.org/pages/agents/tocplague.html

- Center for Infectious Disease Research and Policy
  www1.umn.edu/cidrap/content/bt/plague/